



AFCTN Test Report 94-145

AFCTB-ID
94-123



TMSS Parsing Test



MIL-M-7700E, Flight Manual



Document Type Definition



RJO Corporation

Quick Short Test Report

13 October 1994



*Prepared for
Electronic Systems Center
Air Force CALS Program Office
HQ ESC/AV-2
4027 Colonel Glenn Hwy Suite 300
Dayton OH 45431-1672*

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Air Force CALS Test Bed

Notification of Test Results

13 October 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

RJO Corporation

Identified as follows:

Title:	TMSS Parsing Test MIL-M-7700E Flight Manual DTD
Program:	N/A
Program Office:	N/A
Contract No.:	N/A
QSTR No.:	AFCTB-ID 94-123

Received on the following media: **3.5" Diskette**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard	N/A
MIL-STD-1840A Media Format:	N/A
MIL-D-28000A IGES:	N/A
MIL-M-28001B SGML:	PASS
MIL-R-28002A Raster:	N/A
MIL-D-28003 CGM:	N/A

Formal results with associated disclaimer are documented and available from the AFCTB.

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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of this informal test is to analyze Air Force Document Type Definitions (DTDs) for Standard Generalized Markup Language (SGML) syntax, using several commercial and public domain SGML parsers.

2. Test Parameters

Test Plan: AFCTB 94-123

Date of Evaluation: 13 October 1994

Evaluator: George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator: Roger Huckaby
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4027 Colonel Glenn Hwy
Suite 200
Dayton OH 45431-1672

Data Description: Technical Manual Test
3 DTDs

Data Source System:

Text/SGML

HARDWARE	Unknown
SOFTWARE	Unknown

Evaluation Tools Used:

MIL-M-28001 (SGML)
PC 486/50
Exoterica XGMLNormalizer v1.2e3.2
Exoterica Validator v2.0 ex1
Public Domain sgmls

Standards Tested: MIL-M-28001B

3. 1840A Analysis

3.1 External Packaging

The 3.5" diskette was hand delivered to the Air Force CALS Test Bed (AFCTB). It was not enclosed in any type of container.

The files received by the AFCTB were not MIL-STD-1840A. The files were not named per the standard conventions, as the stated purpose of the evaluation was the basic data structure.

4. SGML Analysis

4.1 D700EA0.ORG

The AFCTB has several parsers available for evaluating submitted DTD and text files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. These products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings unless specified in the report. Changes to DTD or text files required by each system are not documented in the report.

The goal was to configure the DTD under analysis as it would normally be used. However, for this analysis it was necessary to modify the DTD adding the "DOCTYPE doc [" statement to the start and the companion "]">" to the end of the DTD under evaluation, as stated in the comments of the DTD. If the parser did not support a formal file pointing to the location of the ISO character sets, this was added.

The DTD under evaluation, MIL-M-7700E, Flight Manual, was a stand alone DTD. The DTD was not changed except to insert the location of the ISO character set files in the D700EA0.ORG DTD. During the inspection of the DTD, it was noted that several options could be selected depending on the type flight manual required. These options were defined in marked section of the DTD.

The text and DTD files were evaluated using the Exoterica Validator exl parser. No errors were reported.

The text and DTD files were tested using the Exoterica XGMLNormalizer parser. No errors or warnings were reported.

The text and DTD files were evaluated using the Public Domain sgmls parser. This utility was utilized to determine the capacity statement requirements. The following warning was issued by this utility:

sgmls: Warning at \ws\94123a.dtd, line 1123 in declaration parameter 0:
End-tag minimization should be "0" for element with CONREF
attribute

```
<!ELEMENT gendiag      - - (figure | foldout) >
<!ATTLIST gendiag      xref IDREF #CONREF >
```

No errors were reported by any of the parsers used in the
AFCTB.

4.2 D700EB0.ORG

The DTD under evaluation, MIL-M-7700E, Flight Manual Supplement, required the basic MIL-M-7700E DTD. The DTD was not changed except to insert the location of the basic DTD and the ISO character set files in the D700EA0.ORG DTD.

D700EB0.ORG --> D700EA0.ORG

The same comments made about the basic DTD and concrete syntax were legal for this DTD, as it called the basic DTD.

The text and DTD files were evaluated using the Exoterica Validator exl parser. No errors were reported. The parser reported two type warnings. The first type was a parameter entity name declared more than once.

```
<!-- **Warning** in "i:\94123\94123a.dtd" (entity "%m7700e-a"), line
119, used in "\xgml\94123b.dtd", line 117:
A parameter entity name has been declared more than once.
The entity is "%idinf".
<!ENTITY % idinf      "(tmidno+, pretmidno*, doctype?, prtitle, subti-
tle?, (m
-----
-->
```

The second type warning was for elements excluded from the content model.

```
<!-- **Warning** in "\xgml\94123b.dtd", line 135:
An element is not allowed in the document instance because it does
not appear in any accessible content model or it is completely
excluded.
The element is "ABBRSECT".
-->
```

The text and DTD files were tested using the Exoterica XGMLNormalizer parser. No errors or warnings were reported.

The text and DTD files were evaluated using the Public Domain *sgmls* parser. This utility was used to determine the capacity statement requirements. Three duplicate entries and one end tag warning were issued by this utility.

sgmls: Warning at \ws\94123a.dtd, line 1123 in declaration parameter 0:
End-tag minimization should be "0" for element with CONREF
attribute

```
<!ELEMENT gendiag      - - (figure | foldout) >
<!ATTLIST gendiag      xref IDREF #CONREF >
```

4.3 D700EC0.ORG

The DTD under evaluation, MIL-M-7700E, Flight Manual Checklist (D700EC0.ORG), was a stand alone DTD. The DTD was not changed except to insert the location of the ISO character set files in the D700EC0.ORG DTD. During the inspection of the DTD, it was noted that several options could be selected depending on the type flight manual required. These options were defined in marked sections of the DTD.

The text and DTD files were evaluated using the Exoterica Validator exl parser. Three types of warnings were issued by this utility. The first type warning was a parameter entity name declared more than once.

```
<!-- **Warning** in "\xgml\94123c.dtd", line 107:
  A parameter entity name has been declared more than once.
  The entity is "%bodyele".
  <!ENTITY % bodyele "(front, suppnun, (((cldescription & clnormproc &
  -----
-->
```

The second type warning was for elements excluded from the content model.

```
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element is not allowed in the document instance because it does
  not appear in any accessible content model or it is completely
  excluded.
  The element is "CHGHISTDATE".
-->
```

The third type warning was for an undefined element.

```
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element name specified in a USEMAP declaration, ATTLIST declaration
  or content model is not defined by an ELEMENT declaration.
  The element name is "EMERPROCNOT".
```

The text and DTD files were tested using the Exoterica *XGMLNormalizer* parser. One warning was issued for an undefined element.

The text and DTD files were evaluated using the Public Domain *sgmls* parser. Two warnings were issued by this utility; an undefined element and a duplicate definition.

5. Conclusions and Recommendations

The DTD, MIL-M-7700E (D700EA0.ORG) was successfully parsed, using the utilities available within the AFCTB, without a reported error.

The DTD, MIL-M-7700E (D700EB0.ORG) was successfully parsed, using the utilities available within the AFCTB, without a reported error.

The DTD, MIL-M-7700E (D700EC0.ORG) was successfully parsed, using the utilities available within the AFCTB, without a reported error. However, all parsers reported warnings for an undefined element.

6. Appendix A - Detailed SGML Analysis

6.1 MIL-M-7700E - Basic

6.1.1 Exoterica Validator Parser

```
<!-- **Error** in "\xgml\94123a.dtd", line 840:
  The number of names in a name group, name token group or content model must
  not exceed the GRPCNT quantity limit.
  The number of names or tokens exceeds 32.
  comm & light & oxygen? & airdatacomp? &
  ^
-->
<!-- **Error** in "\xgml\94123a.dtd", line 1627:
  The number of names in a name group, name token group or content model must
  not exceed the GRPCNT quantity limit.
  The number of names or tokens exceeds 32.
  missappr & touchgo & aftland & hotrefuel? &
  ^
-->
<!-- **Error** in "\xgml\94123a.dtd", line 1917:
  The number of names in a name group, name token group or content model must
  not exceed the GRPCNT quantity limit.
  The number of names or tokens exceeds 32.
  oxygen? & airdatacomp? & armweap? &
  ^
-->
<!-- **Error** in "\xgml\94123a.dtd", line 1948:
  The number of names in a name group, name token group or content model must
  not exceed the GRPCNT quantity limit.
  The number of names or tokens exceeds 32.
  touchgo? & aftland? & hotrefuel? & engshut?
  ^
-->
<!-- Capacity points/limits:
  TOTALCAP =437257/450000
  ENTCAP   =12672/200000
  ENTCHCAP =14289/70000
  ELEMCAP  =13024/70000
  GRPCAP   =136640/150000
  EXGRPCAP =5568/70000
  EXNMCAP  =10464/70000
  ATTCAP   =208800/220000
  ATTCHCAP =4453/70000
  AVGRPCAP =30944/70000
```

NOTCAP =128/70000
NOTCHCAP =275/70000
IDCAP =0/70000
IDREFCAP =0/70000
MAPCAP =0/70000
LKSETCAP =0/70000
LKNMCAP =0/70000

-->

Log file after setting GRPCNT to 60.

<!-- Capacity points/limits:
TOTALCAP =437146/500000
ENTCAP =12672/200000
ENTCHCAP =14178/70000
ELEMCAPI =13024/70000
GRPCAP =136640/150000
EXGRPCAP =5568/70000
EXNMCAP =10464/70000
ATTCAP =208800/220000
ATTCHCAP =4453/70000
AVGRPCAP =30944/70000
NOTCAP =128/70000
NOTCHCAP =275/70000
IDCAP =0/70000
IDREFCAP =0/70000
MAPCAP =0/70000
LKSETCAP =0/70000
LKNMCAP =0/70000

-->

6.1.2 Exoterica XGMLNormalizer Parser

C:\XGML\XGMLNORM.EXE --

Warning on line 1219 in file 94123a.dtd:

A capacity in the current concrete syntax has been exceeded.

The total capacity limit for the document has been exceeded.

C:\XGML\XGMLNORM.EXE --

Warning on line 1392 in file 94123a.dtd:

A capacity in the current concrete syntax has been exceeded.

Too many content model tokens.

C:\XGML\XGMLNORM.EXE --

Warning on line 2200 in file 94123a.dtd:

A capacity in the current concrete syntax has been exceeded.

Too many attributes defined.

No errors reported after the capacities were increased.

6.1.3 Public Domain sgmls Log

sgmls: Warning at \ws\94123a.dtd, line 1123 in declaration parameter 0:
End-tag minimization should be "0" for element with CONREF attribute
sgmls: SGML error:
Capacity limit TOTALCAP exceeded by 237201 points
sgmls: SGML error:
Capacity limit ATTCAP exceeded by 8800 points

TOTALCAP 437201
ENTCAP 12672
ENTCHCAP 14233
ELEMCAP 13024
GRPCAP 136640
EXGRPCAP 5568
EXNMCAP 10464
ATTCAP 208800
ATTCHCAP 4453
AVGRPCAP 30944
NOTCAP 128
NOTCHCAP 275
IDCAP 0
IDREFCAP 0
MAPCAP 0
LKSETCAP 0
LKNMCAP 0

6.2 MIL-M-7700E - Appendix A

6.2.1 Exoterica Validator Parser

```
<!-- **Warning** in "i:\94123\94123a.dtd" (entity "%m7700e-a"), line 119,
      used in "\xgml\94123b.dtd", line 117:
      A parameter entity name has been declared more than once.
      The entity is "%idinf".
      <!ENTITY % idinf      "(tmidno+, pretmidno*, doctype?, prtitle, subtitle?, (m
      -----
-->
<!-- **Warning** in "i:\94123\94123a.dtd" (entity "%m7700e-a"), line 162,
      used in "\xgml\94123b.dtd", line 117:
      A parameter entity name has been declared more than once.
      The entity is "%docatt".
      <!ENTITY % docatt
      -----
-->
<!-- **Warning** in "i:\94123\94123a.dtd" (entity "%m7700e-a"), line 254,
      used in "\xgml\94123b.dtd", line 117:
      A parameter entity name has been declared more than once.
      The entity is "%text".
      <!ENTITY % text      "(#PCDATA | change | ftnref | xref | indxflag | verbatim
      -----
-->
<!-- **Warning** in "\xgml\94123b.dtd", line 135:
      An element is not allowed in the document instance because it does not
      appear in any accessible content model or it is completely excluded.
      The element is "ABBRSECT".
-->
      The element is "ABCHARENGOUT".
      The element is "ABCHARROLL".
      The element is "ABCHARUNI".
      The element is "ABCHARUNU".

      <<<<< PART OF LOG FILE REMOVED HERE >>>>>

      The element is "WINDDEF".
      The element is "WINDSHEAR".
      The element is "WINDSHLD".
      The element is "WINDTBL".
      The element is "WOOPERTBL".
      The element is "XREF".
<!-- Capacity points/limits:
      TOTALCAP =432883/500000
      ENTCAP   =12800/200000
```

ENTCHCAP =15419/70000
ELEMCAPI =13184/70000
GRPCAP =130304/150000
EXGRPCAP =5600/70000
EXNMCAPI =10528/70000
ATTCAP =208896/225000
ATTCHCAP =4453/70000
AVGRPCAP =31296/70000
NOTCAP =128/70000
NOTCHCAP =275/70000
IDCAP =0/70000
IDREFCAP =0/70000
MAPCAP =0/70000
LKSETCAP =0/70000
LKNMCAPI =0/70000

-->!-- 0 errors and 331 warnings reported. -->

6.2.2 Exoterica XGMLNormalizer Parser

No reported errors or warnings.

6.2.3 Public Domain sgmls Log

sgmls: In file included at \ws\94123b.dtd, line 43:
Warning at c:\ws\94123.dtd, line 121 in declaration parameter 4:
Duplicate specification occurred for "%idinf"; duplicate ignored
sgmls: In file included at \ws\94123b.dtd, line 43:
Warning at c:\ws\94123.dtd, line 166 in declaration parameter 4:
Duplicate specification occurred for "%docatt"; duplicate ignored
sgmls: In file included at \ws\94123b.dtd, line 43:
Warning at c:\ws\94123.dtd, line 256 in declaration parameter 4:
Duplicate specification occurred for "%text"; duplicate ignored
sgmls: In file included at \ws\94123b.dtd, line 43:
Warning at c:\ws\94123.dtd, line 1121 in declaration parameter 0:
End-tag minimization should be "O" for element with CONREF attribute
sgmls: SGML error:
Capacity limit TOTALCAP exceeded by 231851 points
sgmls: SGML error:
Capacity limit ATTCAP exceeded by 8896 points

TOTALCAP 431851
ENTCAP 12800
ENTCHCAP 14387
ELEMCA 13184
GRPCAP 130304
EXGRPCAP 5600
EXNMCA 10528
ATTCAP 208896
ATTCHCAP 4453
AVGRPCAP 31296
NOTCAP 128
NOTCHCAP 275
IDCAP 0
IDREFCAP 0
MAPCAP 0
LKSETCAP 0
LKNMCA 0

6.3 MIL-M-7700E - Appendix C

6.3.1 Exoterica Validator Parser

```
<!-- **Warning** in "\xgml\94123c.dtd", line 107:
  A parameter entity name has been declared more than once.
  The entity is "%bodyele".
  <!ENTITY % bodyele "(front, suppnnum, (((cldescription & clnormproc &
  ~~~~~~
-->
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element is not allowed in the document instance because it does not
  appear in any accessible content model or it is completely excluded.
  The element is "CHGHISTDATE".
-->
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element name specified in a USEMAP declaration, ATTLIST declaration or
  content model is not defined by an ELEMENT declaration.
  The element name is "EMERPROCNOT".
-->
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element is not allowed in the document instance because it does not
  appear in any accessible content model or it is completely excluded.
  The element is "LEP".
-->
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element is not allowed in the document instance because it does not
  appear in any accessible content model or it is completely excluded.
  The element is "REPL".
-->
<!-- **Warning** in "\xgml\94123c.dtd", line 954:
  An element is not allowed in the document instance because it does not
  appear in any accessible content model or it is completely excluded.
  The element is "SUPPNUM".
-->
<!-- Capacity points/limits:
  TOTALCAP =100623/200000
  ENTCAP   =12256/200000
  ENTCHCAP =12738/70000
  ELEMCAP  =4320/70000
  GRPCAP   =29728/70000
  EXGRPCAP =1632/70000
  EXNMCAP  =3712/70000
  ATTCAP   =24928/200000
  ATTCHCAP =602/70000
  AVGRPCAP =10304/70000
```

NOTCAP =128/70000
NOTCHCAP =275/70000
IDCAP =0/70000
IDREFCAP =0/70000
MAPCAP =0/70000
LKSETCAP =0/70000
LKNMCAP =0/70000

-->

6.3.2 Exoterica XGMLNormalizer Parser

C:\XGML\XGMLNORM.EXE --
Warning on line 954 in file 94123c.dtd:
An undeclared element name was used in a content model.
The element is 'EMERPROCNOT'.

6.3.3 Public Domain sgmls Log

sgmls: Warning at \ws\94123c.dtd, line 36 in declaration parameter 4:
Duplicate specification occurred for "%bodyele"; duplicate ignored
sgmls: Warning at \ws\94123c.dtd, line 881 at record end:
Element "EMERPROCNOT" used in DTD but not defined

TOTALCAP 99779
ENTCAP 12256
ENTCHCAP 11894
ELEMCAP 4320
GRPCAP 29728
EXGRPCAP 1632
EXNMCAP 3712
ATTCAP 24928
ATTCHCAP 602
AVGRPCAP 10304
NOTCAP 128
NOTCHCAP 275
IDCAP 0
IDREFCAP 0
MAPCAP 0
LKSETCAP 0
LKNMCAP 0